Results of ElectroCore® Pilot Testing at E.C. Gaston Steam Plant

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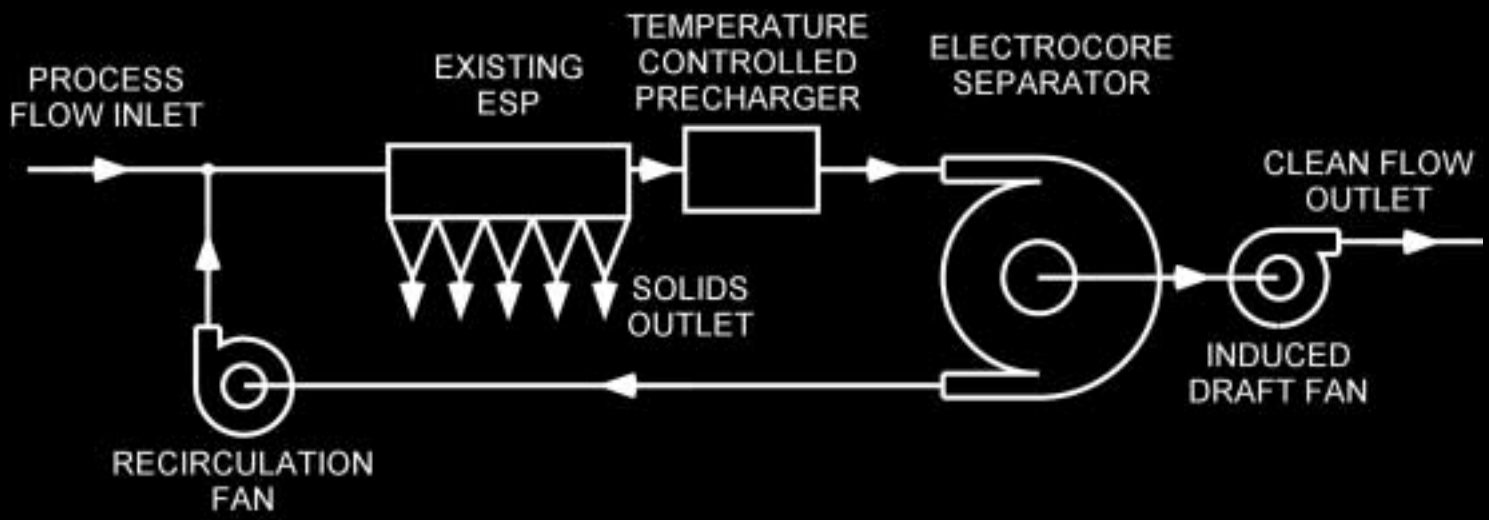
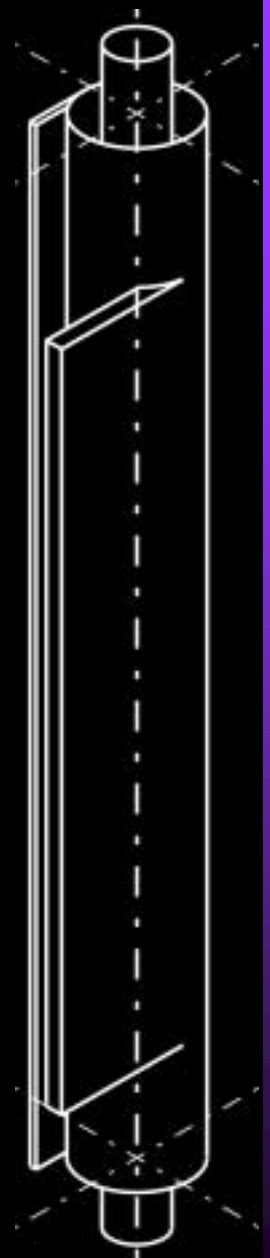
Background

- ElectroCore - electrostatic particle separator
- Retrofit technology for underperforming ESPs
- Developed to separate high resistivity fly ash
  - Separate particle precharger and separator
  - Temperature controlled precharger: Allows high current densities
  - ElectroCore electrostatic separator: No corona so essentially zero current density

Separator Concept

Diameter	~ 40 cm (16 in)
Height	~ 3.0 m (10 ft)
Flow Rate	~ 0.23 m^3/s (500 acfm)



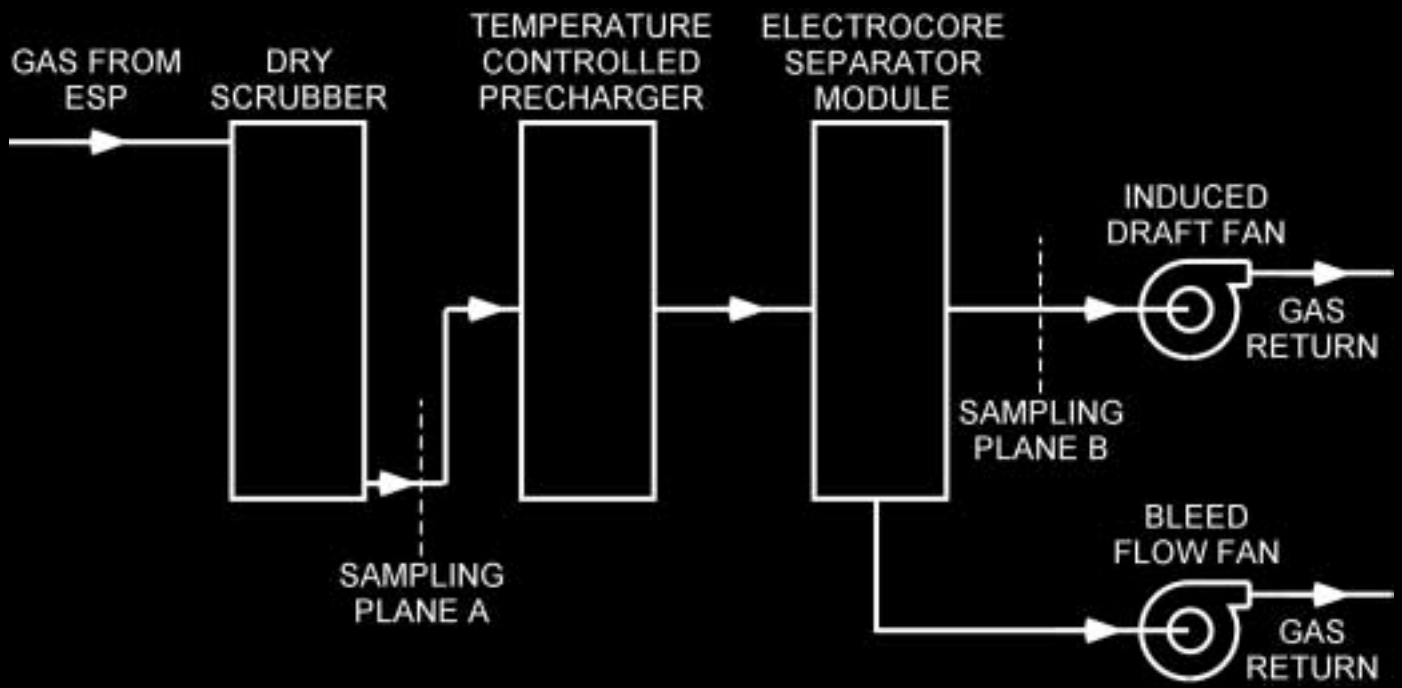


ElectroCore Prototype – 2.8 m^3/s (6,000 acfm)

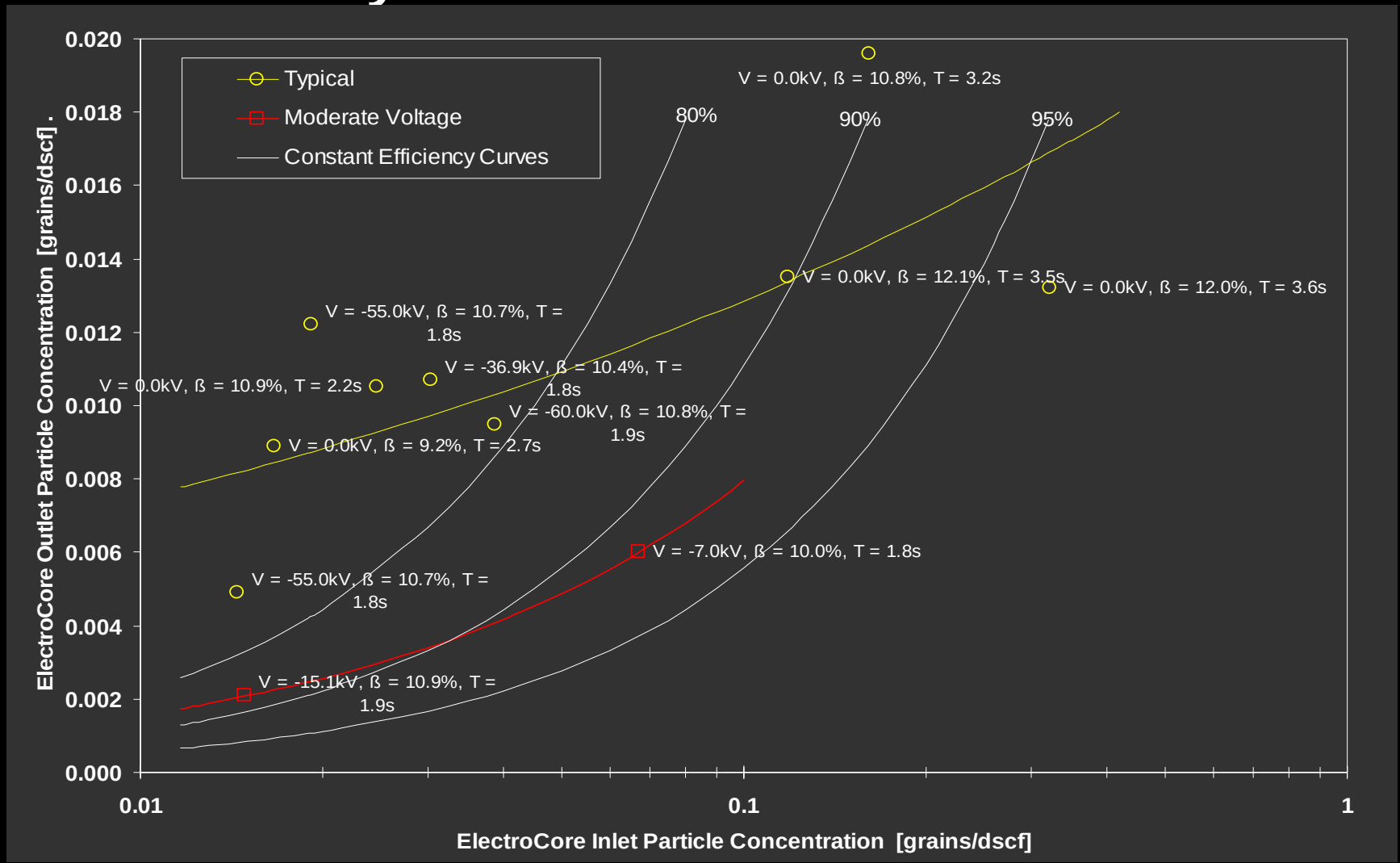
ElectroCore

Precharger

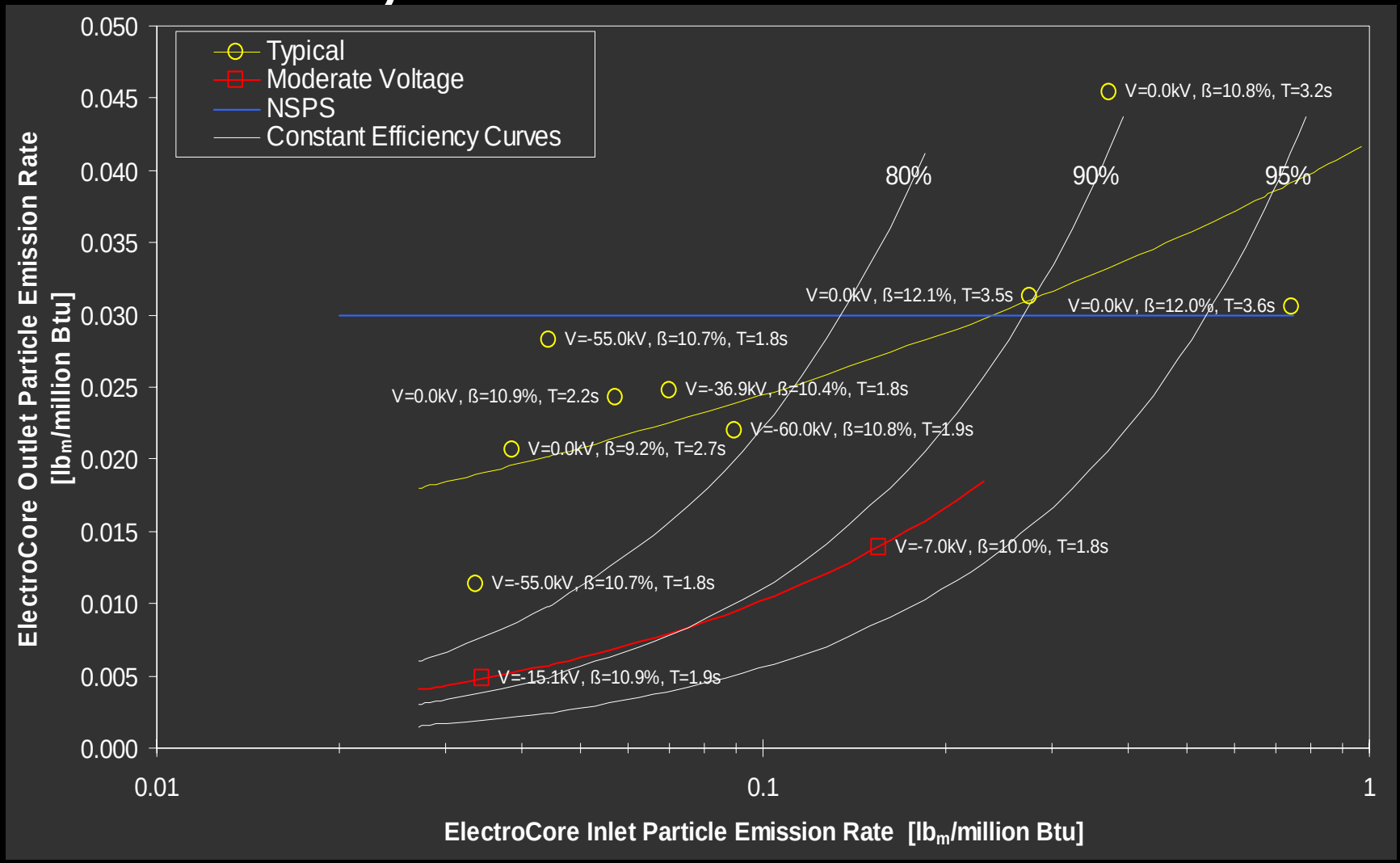
Field Prototype Flow Schematic



Results by Concentration



Results by Emission Rate



Conclusions

- 12x scale-up demonstrated
- Optimum performance occurs at moderate separator electrode voltages
- Efficiency increases with increasing inlet loading
- Emission rates <0.005 lb_m/million Btu achieved
- Can achieve 0.03 lb_m/million Btu for plants currently <0.4 lb_m/million Btu
- Total mercury capture about 90% at 7 lbm of activated carbon per million ft^3 of gas